DEPARTMENT OF PUBLIC INSTRUCTION

The mission of the North Carolina Department of Public Instruction (DPI) is to provide leadership to serve the educational needs of elementary, middle, and secondary school students to achieve the best possible educational outcomes. DPI administers approximately $3.5 billion in State and federal funds in accomplishing this mission. Automated systems play a major role in the management and control of these funds and the delivery of services to the State's citizens.

The Division of Management Information Systems (MIS), reporting directly to the Deputy Secretary of the Department of Public Instruction, is responsible for planning and managing the information resources of the department.

Over the past six years, the State and the MIS division have undertaken a major system modernization effort, spending approximately $50 million to install new systems and hardware to support the organizational elements of the public educational system in the State.

The data processing needs of DPI, the local education agencies (LEAs), and the individual schools are supported by the following computer hardware:

- The IBM mainframe computer at SIPS. The SIPS mainframe is used to maintain large data bases, statistical packages, and central department applications.

- A series of more than 100 IBM AS/400 and System/36 minicomputers located at each of the 132 LEAs. The largest LEA operates an IBM 4381. The major applications being processed at this level include payroll, general accounting, fixed assets accounting, warehouse inventory, child nutrition, and office automation. The LEA portion of the State's Student Information Management System (SIMS) also resides on these minicomputers.

- IBM PC/AT and PS/2 microcomputers are used at the school level for processing SIMS. This system handles class scheduling, grade reporting, attendance, and various school administrative functions. Currently SIMS is installed in 1,700 of the State's schools, with about 300 more elementary schools still to have the system installed.

Several information technology initiatives are being taken by the MIS division, including:

- Converting the business management software from older and less efficient System/36 to native AS/400 code, which should increase the performance of the application software six-fold.

- Installing the Transportation Information Management System (TIMS) in all local school units.

- Upgrading the current System/36s, which are obsolete, to AS/400s.

The major findings and recommendations concerning information technology and telecommunications within DPI follow.

Finding 75 - The current MIS organization lacks certain necessary elements.

There are several organizational issues regarding DPI's MIS function:

- No single manager is responsible for application systems. The Director of MIS indicated that the Assistant Director has always functioned as the head of application systems, but has also had the rest of the department reporting to him. The Assistant Director position is currently vacant, and there is a freeze on filling this position. This situation requires the Director to not only perform his function, but also to oversee the Application Systems group.

- The Transportation Information Management System (TIMS) is reporting to the Director as a special project when in reality it is an operational system under maintenance.

Recommendation - The MIS function should be reorganized to make it more effective.

The following changes should be made:

- Eliminate the Assistant Director position.

- Create a Manager of Application Systems position, to which all application teams report.

- Reassign the Transportation Information Management System project to either the Application Systems group or the programmatic area.

Finding 76 - No independent quality assurance function exists in the MIS Department.

There is no central independent group responsible for quality assurance. Each individual application development team approaches QA from its own perspective. With some 200 systems and 35 people in application systems, an independent QA function should be in place.

Recommendation - Establish an independent quality assurance function.

The QA function should be headed by a senior IRM manager reporting to the MIS Director. The QA manager should be responsible for:

- Coordinating the development of MIS standards

- Establishing procedures for conducting quality reviews and formal testing
- Participating in critical reviews of major product deliverables

Processes that should be put in place are: formal design and coding walk-throughs, development and approval of formal test plans, and development of standard test beds.

Finding 77 - DPI does not have an MIS management advisory or steering committee.

There is no senior management advisory or steering committee in DPI providing guidance and direction to the MIS function.

Recommendation - Establish an MIS Steering Committee.

The function of this steering committee is to set the direction for MIS and to establish priorities for automation initiatives. The committee should be chaired by either the Secretary or Deputy Secretary of the department. It should include the Assistant Secretary from each of the program divisions, the Director of MIS (non-voting), and several representatives rotating from the LEAs. The committee should meet at least once a month; more frequently if MIS issues warrant it. The committee should have a formal charter that spells out its role and responsibilities.

Finding 78 - The DPI disaster recovery plan is not complete and requires significant updating to make it operational.

The current DPI disaster recovery plan is a solid starting point for the development of a department MIS disaster recovery plan. The current plan lacks some critical elements that need to be added to make it complete. The major weaknesses are:

- No backup hot site is identified in the plan. DPI is in the final stages of reaching an agreement with IBM concerning the DPI hot backup site for the System/36 and AS/400 minicomputers.
- Communication lines will need to be established between SIPS and the IBM hot site once it has been designated.
- No test plans exist to verify the viability of the plan.
- No individual application level disaster recovery plans have been prepared for DPI's central applications to support the SIPS IBM hot site disaster plan.

Recommendation - Update the disaster recovery plan.

The DPI Disaster Recovery Plan should be updated as follows:

- Update the plan to reflect the final agreement reached with IBM concerning the DPI hot backup site for the System/36 and AS/400.
- Establish communication lines between SIPS and the IBM hot site.
- Develop test plans for the hot site recovery.
- Conduct a test of the disaster recovery plan at least once a year.
- Develop individual application level disaster recovery plans complementing the SIPS IBM hot site disaster plan. DPI should not wait until the SIPS plan is completed to start this effort.

Finding 79 - MIS has not performed the level of detail planning for the Apple MAC LAN that it has for the IBM-compatible PC LAN.

The Apple MAC LAN in the new DPI building will have 200+ work stations on it initially. It is approximately half the size of the current IBM PC LAN. However, far less planning has been done on the Apple MAC LAN.

MIS plans to implement the Apple MAC network on unshielded twisted pair cabling using an EtherNet architecture and AppleTalk. This network is also planned to use the PC LAN gateway to SIPS. However, MIS is not sure whether the LAN will have one or two segments. The planning for the network has not included the number of file servers or print servers required.

Recommendation - Do more detail planning for the Apple MAC LAN.

MIS has done a fair amount of planning for its IBM PC LAN network in the new building, including the number of logical networks, number and sizes of file servers, location and number of bridges and gateways, etc. The IRM group should provide the same level of planning and support to the development of the Apple MAC LAN as it has to the IBM PC LAN.

Finding 80 - The MIS Help Desk does not support the entire DPI end-user community.

Currently the Help Desk only takes calls from LEA end-users. All other DPI users call an individual analyst or programmer.

Recommendation - Expand the scope of the current Help Desk.

The Help Desk should accept all end-user calls from both LEAs and headquarters. This will establish a single focal point for logging and tracking all problems and requests for assistance.

In addition, a significant number of the calls coming into the Help Desk are caused by a lack of training on the application system's capabilities. DPI should develop a minimum level of application training that all users must complete. This training should then be provided several times a year.

Finding 81 - DPI's applications security is primarily through CICS, but the latest release of CICS no longer provides for this capability.

Most security in the DPI systems is currently performed by CICS. DPI runs a number of different CICS versions in different regions. DPI is just now going to CICS 3.1 for three new regions. Most regions are on older versions than 3.1 (primarily 2.8).

With Version 3.2 of CICS, IBM has removed all security functions in CICS and left RACF to perform all transaction level security functions.

Recommendation - Initiate planning for the conversion of security functions from CICS to RACF.

To go to CICS 3.2, DPI will need to convert its security functions from CICS to RACF. This migration will take a significant amount of work and planning, and the effort should begin now to allow adequate time.

Finding 82 - MIS application analysts do not have software development and maintenance tools that could make their function more efficient and effective.

MIS has acquired and uses a number of software productivity tools to support the design, development and maintenance of its applications. However, the staff does not have access to such tools as:

- Test coverage monitors
- Test data generators
- Source/file comparison tools
- Static COBOL code analyzers

Recommendation - Review productivity tools and determine if additional tools should be used.

MIS should review the software tools currently at SIPS or that SIPS plans to acquire to determine if any of these tools should be introduced to the DPI programmers.

Finding 83 - DPI currently acquires PC software packages on an individual basis.

PC software packages like spreadsheets and word processing are currently being procured on an individual PC license basis. With DPI's migration to a LAN-based architecture and its plan for additional work stations in the department, there is a potential for doubling the number of software packages that need to be purchased for these systems.

Recommendation - Investigate obtaining LAN software package licenses.

LAN licenses should enable DPI to save substantial sums of money over individual work station licenses. There should be potential savings even though some vendors do not negotiate price on LAN licenses. However, it will require DPI to conduct studies into the required concurrent need for each package and to negotiate with the vendors to realize the savings.

Finding 84 - DPI does not analyze cost-effectiveness in purchasing personal computers.

DPI's MIS group purchases only IBM manufactured personal computers. Thus DPI has not made the best use of the competitive acquisition process to procure cost-effective solutions to the personal computer needs of the department. As a result, DPI has probably spent more money than was necessary.

Today's data processing environment offers competitive products in this area. The market place has a wide selection of high quality PC-compatible work stations. In many cases, products are available that are more advanced than IBM PCs and at significantly lower prices. Compatibility has not been a problem with the products available from the reputable PC-compatible manufacturers.

Recommendation - Stop directed sole source procurement for IBM PCs in favor of competitive procurement of compatible offerings.

DPI should establish a policy of encouraging competition and the evaluation and selection of data processing hardware and software based on a combination of technical and cost considerations versus directed vendor procurement.

DEPARTMENT OF REVENUE

The mission of the Department of Revenue (DOR) is to administer the tax laws of North Carolina and to collect the taxes due the State in a fair, equitable, and efficient manner. The collection and processing of taxes are heavily dependent upon the use of information technology and data processing. To better achieve this mission, DOR has established the following information technology initiatives in the department:

- Investigate the electronic processing of returns, documents, and payments
- Implement advanced methods for initial entry of data into the system
- Establish electronic funds transfer (EFT) for collection of payments from taxpayers with a stated level of liability above some minimum threshold
- Pursue electronic filing of tax returns
- Implement an Integrated Tax Administration System
- Investigate the "Rapid Refund" concept

The Management Information Systems Division (MIS), reporting to the Assistant Secretary of Administrative Services, is responsible for the above initiatives as well as for maintaining and running the current production tax systems. The department has approximately 100 full time equivalents (FTEs), of which approximately 50 are data entry personnel.

Currently DOR has three computer systems supporting the development and production of systems:

- IBM 4341 runs the majority of the production tax systems. It is configured with obsolete hardware and software components, many of which are either no longer supported by the manufacturer or are scheduled to be dropped. The age of this equipment makes the likelihood of component failure very high.
- IBM 4381 runs a few production tax systems. However, at this time it is primarily used to support a technical conversion effort intended to replace the 4341 production machine. Though a newer machine than the 4341, the 4381 has also been out of production for over 10 years. It has far lower reliability and is more expensive to operate than current technology.
- DEC VAX CLUSTER consisting of three 6000 level machines supporting some 500 terminals and the department's office automation functions. There are also two idle VAX 3400s.

The current production tax application systems can be characterized as follows:

- Programs are written in old, low-level programming languages or older versions of higher level procedural languages. This makes these programs much more difficult and costly to maintain and upgrade than programs written in current programming languages.

- Most systems depend upon punch cards and/or tapes, which make tax processing slow and prone to errors. Data are not integrated across tax schedules and systems.

- Most programs were developed in the 1970s or 1960s based on the technologies and design concepts of that time. The processing of these systems is highly dependent on interactions with a computer operator and is prone to errors.

- Over 60 percent of the code is unstructured, and therefore difficult to understand and time consuming to maintain.

- Approximately 80 percent to 90 percent of the programmer effort is devoted to maintenance of existing systems. Therefore, programmer resources are not available for new technology initiatives.

Recognizing the obsolescence of the current production computer and the poor condition of its production application systems, MIS is currently devoting most of its discretionary resources, supported by a contractor, to the stabilization of the current production systems. This effort was scheduled to continue through September 1992.

Finding 85 - DOR's current information technology infrastructure is inefficient and error prone.

The current status of the DOR's computer and application systems is such that the mission of the department is at risk. The data processing operation is extremely inefficient and component failures could impact tax processing. The department has the worst data processing infrastructure reviewed by the performance audit. The major threats to the department come from:

- Computer equipment and system software that have inherently lower reliability than current technology and are or soon will be no longer supported by the manufacturer.

- Application systems and procedures that are extremely labor intensive and error prone. Tax processes require significant manual intervention and are rerun several times before a successful run can be completed. Each operator intervention increases the potential for errors.

- Application systems that require significant time and effort to modify and update and are subject to high probability of programmer error.

Even after the conversion effort that is due to be completed in September 1992, DOR's systems will still be extremely inefficient and subject to high failure and error rates. The IBM 4381 is not an adequate platform nor are the production application systems designed to support the new technology initiatives.

Recommendation - The Department must commit the resources and management oversight to correct the problem.

The problem in DOR is not a new one, but one that has been developing for over 20 years. The solution to this problem will require substantial financial and staff resources and concerted effort on the part of the department. Without the commitment, the department's mission will be increasingly at risk at a time when revenue collections cannot afford negative impacts.

Finding 86 - The Department lacks sufficient resources to support its many technology initiatives.

Nearly all available resources within MIS are being devoted either to keeping the current systems operational and compliant with legislative mandates or to the conversion effort that is designed to stabilize the current systems on the 4381. In addition, MIS staff are involved in elements of the department's reorganization and move to the new building. Furthermore, the MIS resources have decreased by 18 full-time positions since 1990. There are too few resources available in MIS to investigate and implement the new information technology initiatives identified by the department, including the Integrated Tax Administration System.

Compounding the situation, few in MIS have any first hand experience with the new technologies the department is attempting to implement. Having spent most of their time maintaining old obsolete systems, the skill base is not currently there to effectively support the types of projects being initiated by the department. The MIS resources within DOR do not have the skills nor the time to solve this problem themselves. Further pressure on the limited resources within the department will only increase the probability of costly errors.

Recommendation - Concentrate early effort for DOR's modernization on the management issues and project management planning for new systems.

The department has to reestablish credibility with the General Assembly for its comprehensive modernization plan to move towards its new information technology concept. The plan must have supporting details to address the limitations of the department's resources and capability and to conduct the project in a controlled and low risk manner.

This effort should include at least the following steps:

- Update the requirements for the Integrated Tax Administration System to reflect the effects of the planned reorganization that will change the way it performs its business functions.

- Determine the appropriate target computer platform for the new Integrated Tax Administration System. The State has a number of options available with regard to where the new tax system will run. For example, the system could run on the mainframe computer at SIPS, or the current mainframe at DOR could be upgraded to support processing at DOR.

- Form a project organization and project management structure that has the appropriate skills and experience to manage such a modernization effort and oversee the work performed by the vendor.

- Establish the appropriate quality assurance process and organization to ensure that the system is implemented according to the specified requirements and standards established for the new system.

  Given the lack of appropriately skilled resources, DOR should acquire a second contractor to act as independent validation and verification (IV&V) support to the DOR Project Manager. The IV&V contractor would participate in all project status meetings and review all project deliverables against the documented State requirements and standards. The IV&V contractor should be in place well in advance of the award of the Integrated Tax Administration System contract.

The project planning and management process should not be circumvented. The current risks are too high, and the potential benefits of the new system too great.

Finding 87 - DOR has not provided adequate support to its office automation system and client support function.

DOR implemented a new office automation service in 1988 based upon DEC equipment and ALL-IN-ONE office automation software. The initial configuration was set up to support 300 terminals and a user community that had very little experience in the use of automated office functions. This initial configuration apparently provided adequate support and good response time. The initial plan that brought in the DEC equipment called for a number of upgrades to the system (e.g., additional disk storage) that have never taken place. At the time of the system installation, users received between two and six hours of training, but no additional training has been provided since then.

The use of ALL-IN-ONE and the DEC system has since grown to nearly 500 terminals, and response time has frequently been reported as unsatisfactory. DOR has a Client Support

Center identified on its organization chart; but with the exception of the Help Desk, it does not provide any of the support services associated with this type of group. DOR currently has no remaining staff with DEC technical experience, and there is no manager responsible for the system. As a result, the system is not being monitored, necessary changes to the configuration are not being made, DASD management is not being performed, and user support and training are not being provided.

DOR MIS management has commented that the DEC system should be eliminated. However, this system represents a significant hardware and human resources investment. The computer technology is current, the office automation software is acknowledged in the industry as one of the best, and the user community is trained (even if marginally) to use the system to support its mission. Removal of the DEC system would require a replacement system and significant conversion and training costs.

Recommendation - Continue with the DEC system.

DOR should keep the DEC system and provide the support necessary to make the system functional and usable by the department office automation users. To do this, DOR should:

- Immediately hire a manager to oversee the DEC office management system, and a technical person with the skills and knowledge to tune and plan the system configuration
- Send MIS staff to DEC system training
- Perform an assessment to determine the required configuration changes, upgrades, and enhancements needed to provide adequate response time to the office automation functions
- Reconfigure and upgrade the system, if necessary, to provide adequate service levels
- Define and staff a functional Client Support Center that will provide the end-users with the following capabilities:

  Training
  User support
  Problem resolutions

- Train the end-users in the ALL-IN-ONE system features

Finding 88 - DOR has failed to fully address the State Auditor's findings and recommendations made a year and a half ago.

Based on the State Auditor's EDP Audit Findings and Recommendations made in November 1990 and the reported current status of DOR's response to these findings, the department has fully implemented only 2 of the 11 major actions it stated it would take. All the State Auditor's recommendations were significant and need to be addressed. In a letter to the State Auditor from Secretary Justus, dated January 17, 1991, DOR also concurred that all recommendations need to be addressed.

Recommendation - Fully implement the State Auditor's recommendations.

DOR should complete the following actions stated in its November 17, 1991, letter to the State Auditor:

- Application program change control

  Establish a quality control and planning function - This function has been established. However, only one person has been assigned to the QA function and that individual has had her attention diverted to the conversion effort and away from implementing a QA and change control process.

  Develop new standards - DOR has only started to initiate the update and generation of new standards and has significant work remaining in this area.

  Use FOUNDATION CASE Tools and related life cycle methodology - DOR has purchased Andersen's Method/1 FOUNDATION methodology, but has not made it a standard nor attempted to use it in the management or development of systems.

  Coordinate with SIPS on standards - No evidence of any contact with or coordination with SIPS was found during the performance audit.

- Backup, off-site storage, and contingency planning

  Develop and monitor the implementation and periodic testing of a contingency plan.

  Work with a consortium of agencies to find a cold back-up site.

  DOR will enter into discussions with SIPS about using its site to act as a hot back-up site.

- Security Administration:

  Technical support for the Security Administrator will provide a RACF technical coordinator who will be located in the Technical Services Section.

  Standards and procedures will be developed by the Security Administrator.

- Resource Access Control Facility (RACF):

  Implement and use a full set of security procedures on all data processing equipment.

  DOR has RACF running on its 4381 and uses Level 1 RACF security at SIPS. It uses the DEC provided security package on the VAXs. There is no security package on the 4341 production machine. All security on that machine is at the application level.

Finding 89 - DOR's MIS organization does not have current standards, policies, and procedures.

DOR's current Standard Operating Procedures (SRO) Manual and MVS Standards binder contain a lot of information necessary to effectively and efficiently manage a data processing organization. However, they have a number of shortfalls that limit their usefulness:

- Both documents are out-of-date, with most items dated 1987 or 1988. DOR has undergone some major organizational and technical changes since then and will undergo even more changes in the next year.

- The documents are not well organized, and it is difficult to find information in them

- Some sections have no information at all (e.g., network), while other sections (e.g., quality assurance) do not contain useful information about the area.

- COBOL guidelines and many of the other sections in the Standards manual are just sample program listings and do not contain any narrative description of the actual standard itself.

Recommendation - Update the standards and procedures.

Both the SRO and MVS standards manuals should be updated to reflect the new operating environment that DOR is moving toward. They should also be reorganized to facilitate their use as reference documents. DOR should give this effort a high priority so that the

basic standards can be in place in time to be used during the VSE to MVS conversion. This will require, at the minimum, the dedication of the QA manager to this task.

DOR also should adopt a formal and complete life cycle development methodology. The new life cycle methodology should include all major life cycle stages, including requirements analysis, which is not addressed today. Furthermore, the life cycle management methodology should include more formal testing steps and procedures, including independent testing of changes performed by the programmers. Since the Integrated Tax Administration System will replace 95 percent of the existing systems, the decision on the LCM should be based on the software package purchased.

Finding 90 - MIS staff have not received the training required to successfully move to the new data processing environment.

Very little formal training has been given to the MIS staff, and they lack many of the skills required for the new data processing environment. The department will be at risk if the MIS division does not have the necessary skills.

Recommendation - Develop a formal training plan for the MIS staff.

A formal training plan will facilitate the MIS division upgrading its technical skills for the new MVS environment. Additional training is needed in MVS, CICS, RACF, DB/2, SNA, etc.

The training plan also needs to address the training and skills that will be needed to support the new Integrated Tax Administration System. All systems that DOR is currently reviewing have used specific life cycle development methodologies and CASE tools. The staff that ultimately will be responsible for the maintenance and enhancement of the new system when it is installed need to be trained in these technologies and methodologies.

Finding 91 - No unique report numbering system nor report distribution and control log is used.

No control log of distributed output is maintained. The reports do not have unique numbers for identification, and there is no report distribution list.

Recommendation - Establish better control over the distribution of reports.

DOR should establish a report numbering scheme and uniquely number each output report. At the same time, a distribution list and control log should be established. All input and output entering or leaving the computer room (the I/O room in the new facility) should be logged, date/time stamped, and signed for.

The I/O room should be separated from the computer room, and both should be organized to require minimal if any traffic between the two rooms. Each room should have its own staff. Staff should be rotated periodically/regularly for purposes of cross training.

Finding 92 - DOR's application systems are extremely labor intensive and error prone.

The current production systems are punch card and/or tape oriented. Operators are required to manually intervene in the processing to manually catch situations that the computer should be able to handle. All this manual intervention is inefficient and error prone.

In one example given by the operators, the application system was set to read punch cards in a specific sequence. However, the cards provided to operations were not in that sequence, so they would manually sort them. The application programmer refused to modify his programs to read from disk. Operations' solution was to read the unsorted cards into a disk file, perform a disk sort as a separate process, and repunch the entire card input deck in the sorted sequence. These repunched cards were then entered in the old program run.

In another situation, a computer operator must stand in front of the printer to observe when reports are about to complete so that forms can be changed.

Although a new replacement system will correct these problems, the new system will take years to be fully implemented. DOR cannot wait that long before taking necessary corrective action.

Recommendation - Reduce card/tape dependencies of the current systems.

Where cost-effective, reduce the card and tape orientation of the current applications, thereby reducing the manual computer operator intervention required to run many of these job streams. This analysis should include embedding forms/change instructions within the job runs. The Tape Management System should be used to the extent possible. Temporary disk storage should be used instead of tapes and punch cards for passing data between programs. Operator entered punch cards and parameters should be reduced where possible.

Finding 93 - DOR does not have the software development tools necessary to efficiently and effectively develop and maintain its application systems.

The software development maintenance function within MIS has very few automated tools and software packages to support the design, development, and maintenance of the application systems. Automated tools can increase both the efficiency and effectiveness of the programming staff.

Recommendation - Provide the tools necessary for programmers to be efficient and effective.

If DOR continues with its own mainframe, then it should evaluate and purchase software development and maintenance tools for the new MVS environment that will improve the efficiency and effectiveness of its programmers. Software tools that should be investigated include:

- Test data generator
- Test coverage monitor
- COBOL II
- COBOL code analyzers

If the decision is to move DOR's processing to SIPS, MIS management should work with SIPS to ensure that the same capabilities are made available to its programmers.

Finding 94 - DOR does not monitor the utilization of its computers and does no capacity planning.

DOR is not currently generating utilization reports on any of its machines. The MIS organization is also not doing any regular formal capacity planning.

Recommendation - Initiate performance monitoring and capacity planning.

DOR should start to generate computer utilization reports on the IBM 4381 and the DEC CLUSTER to monitor the key component utilization levels. This will help to predict potential service level problems before they occur, instead of waiting to react to a crisis.

Finding 95 - The data center does not have adequate protection against power outages or fire.

The current data center has no uninterruptible power supply (UPS) or back-up generator. Thus the center has no protection against power surges. Also, a power outage will immediately impact the processing at the center and no back-up source is available for extended power outages.

There is insufficient fire extinguishing capacity in the data center. The only fire extinguishing system available is a hand held fire extinguisher. Besides the fire extinguisher being insufficient to extinguish a major fire, it requires the operators to risk their well being to fight even minor fires. General industry practices are to have computer

rooms immediately evacuated in case of even minor fires, and to have an automated fire extinguishing system and the professional fire fighters deal with the fire.

DOR staff indicated that they have plans for the new data center in the new building to have both an UPS and back-up generator system and adequate fire extinguishing systems.

Recommendation -- DOR should install an UPS, back-up generator, and fire extinguishing system in the new data center.

DOR should follow through with these plans. Current industry practice is to install CO2 based systems versus the older Halon systems. Halon systems completely remove all oxygen in a room when set off, creating a high risk for any individual trapped in that room.

Finding 96 - MIS job descriptions do not reflect the new data processing environment DOR is moving towards.

In general the job descriptions used in MIS are comprehensive and fairly detailed. In some cases, however, the job descriptions contain references to an older version of the Operating System (MVS SP) than the current version (MVS XA) and/or do not reflect the target operating environment DOR is moving towards (e.g., CASE tools).

Recommendation - Update the job descriptions within MIS.

The job descriptions should reflect the new target data processing environment DOR is moving towards. Within the next year, DOR should review its current job descriptions to ensure that they reflect the results of the technology modernization/conversion effort and the skills and training required to support and maintain the new Integrated Tax Administration System when implemented.